

NON-PUBLIC?: N
ACCESSION #: 9312060238
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Palo Verde Unit 3 PAGE: 1 OF 5

DOCKET NUMBER: 05000530

TITLE: Manual Reactor Trip Following Control Rod Misalignment
EVENT DATE: 11/03/93 LER #: 93-004-00 REPORT DATE: 11/20/93

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000
N/A
OPERATING MODE: 1 POWER LEVEL: 024

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Burton A. Grabo, TELEPHONE: (602) 393-6492
Nuclear Regulatory Affairs, Supervisor

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On November 3, 1993, at approximately 1619 MST, Palo Verde Unit 3 was in Mode 1 (POWER OPERATION), operating at approximately 24 percent power when Control Room personnel manually tripped the reactor when it was recognized that subgroup 5 of control element assembly (CEA) regulating group 4 had slipped into the reactor core during reactor power reduction. All CEAs inserted as designed. The reactor trip was followed by a Main Turbine/Main Generator trip. By approximately 1630 MST on November 3, 1993, the plant was stabilized in Mode 3 (HOT STANDBY) and the Shift Supervisor diagnosed the event as an uncomplicated reactor trip. No Engineered Safety Feature Actuation System actuations occurred and none were required. All plant equipment responded as designed.

The cause of the subgroup 5 of CEA regulating group 4 slip could not be determined. No problems or abnormalities that could have contributed to

the subgroup slip were found during the performance of the troubleshooting. Since the event could not be recreated, APS management determined that the most probable components that could cause the event (i.e., subgroup 5 supply breaker and phase synchronizing cards) would be replaced.

There have been no previous similar events reported pursuant to 10CFR50.73.

END OF ABSTRACT

TEXT PAGE 2 OF 5

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

At 1619 MST on November 3, 1993, Palo Verde Unit 3 was in Mode 1 (POWER OPERATION) operating at approximately 24 percent power. Unit 3 was in the process of reducing power to take the Main Turbine (TA) off-line in order to isolate and repair a steam leak on a one-inch main steam (SB) lead drain line downstream of turbine control valve 2 (TA)(FCV).

B. Reportable Event Description (Including Dates and Approximate Times of Major Occurrences):

Event Classification: An event that resulted in the manual actuation of the Reactor Protection System (RPS) (JC).

At approximately 1619 MST on November 3, 1993, Palo Verde Unit 3 Control Room personnel (utility, licensed) manually tripped the reactor (AC) when it was recognized that subgroup 5 of control element assembly (CEA) (AA)(ROD) regulating group 4 had slipped into the reactor core during reactor power reduction. All CEAs inserted as designed. The reactor trip was followed by a Main Turbine/Main Generator trip (TA/TK). By approximately 1630 MST on November 3, 1993, the plant was stabilized in Mode 3 (HOT STANDBY) and the Shift Supervisor (utility, licensed) diagnosed the event as an uncomplicated reactor trip. No Engineered Safety Feature Actuation System (ESFAS) (JE) actuations occurred and none were required. All plant equipment responded as designed.

Prior to the manual reactor trip, at approximately 1243 MST,

Unit 3 commenced a reactor power reduction from 85 percent to approximately 10 percent in order to take the Main Turbine off-line and isolate and repair a steam leak on a one-inch main steam lead drain line downstream of turbine control valve 2.

At approximately 1618 MST, reactor power was at approximately 24 percent, CEA regulating group 5 was at approximately 85 inches withdrawn, part-length CEAs were approximately 95 inches withdrawn, and CEA regulating group 4 was being driven inward a couple of steps to approximately 134 inches withdrawn, when subgroup 5 of CEA regulating group 4 slipped approximately 40 inches into the reactor core to approximately 94 inches withdrawn. A CEA withdrawal prohibit (CWP) alarm (IB) annunciated in the control room (NA) followed by control element assembly calculator (CEAC) -1 and CEAC-2 deviation alarms (IB). The CEAC deviation alarms were initiated when subgroup 5 of CEA regulating group 4

TEXT PAGE 3 OF 5

deviated greater than 4.95 inches inward with respect to subgroup 22 of CEA regulating group 4. The CEACs monitor the positions of all CEAs. The Shift Supervisor directed Control Room personnel to manually trip the reactor. The manual reactor trip was directed in accordance with an approved procedure which requires the trip if two or more CEAs deviate more than 9.9 inches from their group. All CEAs inserted as designed. The reactor trip was followed by a Main Turbine/Main Generator trip. By approximately 1630 MST on November 3, 1993, the plant was stabilized in Mode 3 and the Shift Supervisor diagnosed the event as an uncomplicated reactor trip. No ESFAS actuations occurred and none were required. All plant equipment responded as designed.

C. Status of structures, systems, or components that were inoperable at the start of the event that contributed to the event:

Not applicable - no structures, systems, or components were determined to be inoperable at the start of the event which contributed to this event.

D. Cause of each component or system failure, if known:

Not applicable - no component or system failures were found.

E. Failure mode, mechanism, and effect of each failed component,

if known:

Not applicable - no component failures were found.

F. For failures of components with multiple functions, list of systems or secondary functions that were also affected:

Not applicable - no failures of components with multiple functions were involved.

G. For a failure that rendered a train of a safety system inoperable, estimated time elapsed from the discovery of the failure until the train was returned to service:

Not applicable - no failures that rendered a train of a safety system inoperable were involved.

H. Method of discovery of each component or system failure or procedural error:

Not applicable - there have been no component or system failures or procedural errors identified. There were no procedural errors which contributed to this event.

TEXT PAGE 4 OF 5

I. Cause of Event:

An independent investigation of this event (i.e., a manual reactor trip) was conducted in accordance with the APS Incident Investigation Program. As part of the investigation, an action plan was developed to troubleshoot and investigate the cause of the subgroup 5 of CEA regulating group 4 slip. No problems or abnormalities that could have contributed to the subgroup slip were found during the performance of the troubleshooting. Since the event could not be recreated, APS management determined that the most probable components that could cause the event (i.e., subgroup 5 supply breaker and phase synchronizing cards) would be replaced (SALP Cause Code X: Other). In addition, for a limited duration, CEA regulating group 4 will be monitored during preplanned withdrawal or insertion evolutions in order to detect abnormalities that may have contributed to this event. The vendor did not recommend any further actions. No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event. There were no personnel or

procedural errors which contributed to this event.

J. Safety System Response:

Not applicable - there were no safety system responses and none were necessary.

K. Failed Component Information:

Not applicable - no component failures were found.

II. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

A safety limit evaluation was performed as part of the APS Incident Investigation Program. With reactor power at approximately 24 percent when the CEA slip occurred, penalty factors for a slipped CEA were not large enough to generate a reactor trip. The evaluation determined that the plant responded as designed, that no safety limits were exceeded, and that the event was bounded by current safety analyses. The impact of the transient posed no threat to fuel integrity as adequate subcooling margin and RCS inventory were maintained throughout the event. There were no Departure from Nucleate Boiling Ratio (DNBR) related fuel failures since the Specified Acceptable Fuel Design Limit (SAFDL) for DNBR was not exceeded during the event. Therefore, there were no adverse safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of the plant or health and safety of the public.

TEXT PAGE 5 OF 5

III. CORRECTIVE ACTION:

A. Immediate:

An independent investigation of this event (i.e., a manual reactor trip) was conducted in accordance with the APS Incident Investigation Program. As part of the investigation, an action plan was developed to troubleshoot and investigate the cause of the subgroup 5 of CEA regulating group 4 slip. No problems or abnormalities that could have contributed to the subgroup slip were found during the performance of the troubleshooting. Since the event could not be recreated, APS management determined that the most probable components that could cause

the event
i.e., subgroup 5 supply breaker and phase
synchronizing cards) would be replaced.

B. Action to Prevent Recurrence:

For a limited duration, CEA regulating group 4 will be monitored during preplanned withdrawal or insertion evolutions in order to detect abnormalities that may have contributed to this event.

IV. PREVIOUS SIMILAR EVENTS:

No other previous events have been reported pursuant to 10CFR50.73 where the reactor was manually tripped due to slipped CEAs.

V. ADDITIONAL INFORMATION:

Based on reviews by the Plant Review Board (PRB), the Management Response Team, and the APS Incident Investigation Team, unit restart was authorized by the Plant Manager in accordance with approved procedures. Based on PRB approval, the unit was restored to 85 percent power. On November 5, 1993, Unit 3 entered Mode 2 (STARTUP) at approximately 1313 MST and Mode 1 at approximately 1641 MST, and was synchronized on the grid at approximately 1044 MST on November 6, 1993.

ATTACHMENT 1 TO 9312060238 PAGE 1 OF 1

Arizona Public Service Company
PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 o PHOENIX, ARIZONA 85072-2034
192-00867-JML/BAG/KR
JAMES M. LEVINE November 20, 1993
VICE PRESIDENT
NUCLEAR PRODUCTION

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Mail Station P1-37
Washington, D.C. 20555

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 3

Docket No. STN 50-530 (License No. NPF-74)
Licensee Event Report 93-004-00
File: 93-020-404

Attached please find Licensee Event Report (LER) 93-004-00 prepared and submitted pursuant to 10CFR50.73. This LER reports an event where Unit 3 Control Room personnel manually tripped the reactor when it was recognized that subgroup 5 of control element assembly regulating group 4 had slipped into the reactor core during reactor power reduction. In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, NRC Region V.

If you have any questions, please contact Burton A. Grabo, Supervisor, Nuclear Regulatory Affairs, at (602) 393-6492.

Sincerely,

JML/BAG/KR/rv

Attachment

cc: W. F. Conway (all with attachment)
B. H. Faulkenberry
J. A. Sloan
INPO Records Center

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